

TL μ



ALL REGISTRATION MARK DETECTION APPLICATIONS

- Teach-in, Remote settings
- Red/green or white LED emission
- Various interchangeable lenses and fiber-optic models
- Metal housing with orientable optics and connector

APPLICATIONS

- Packaging and labeling machinery
- Beverage/Food/Cosmetic/Pharmaceutical industries
- Printing machinery

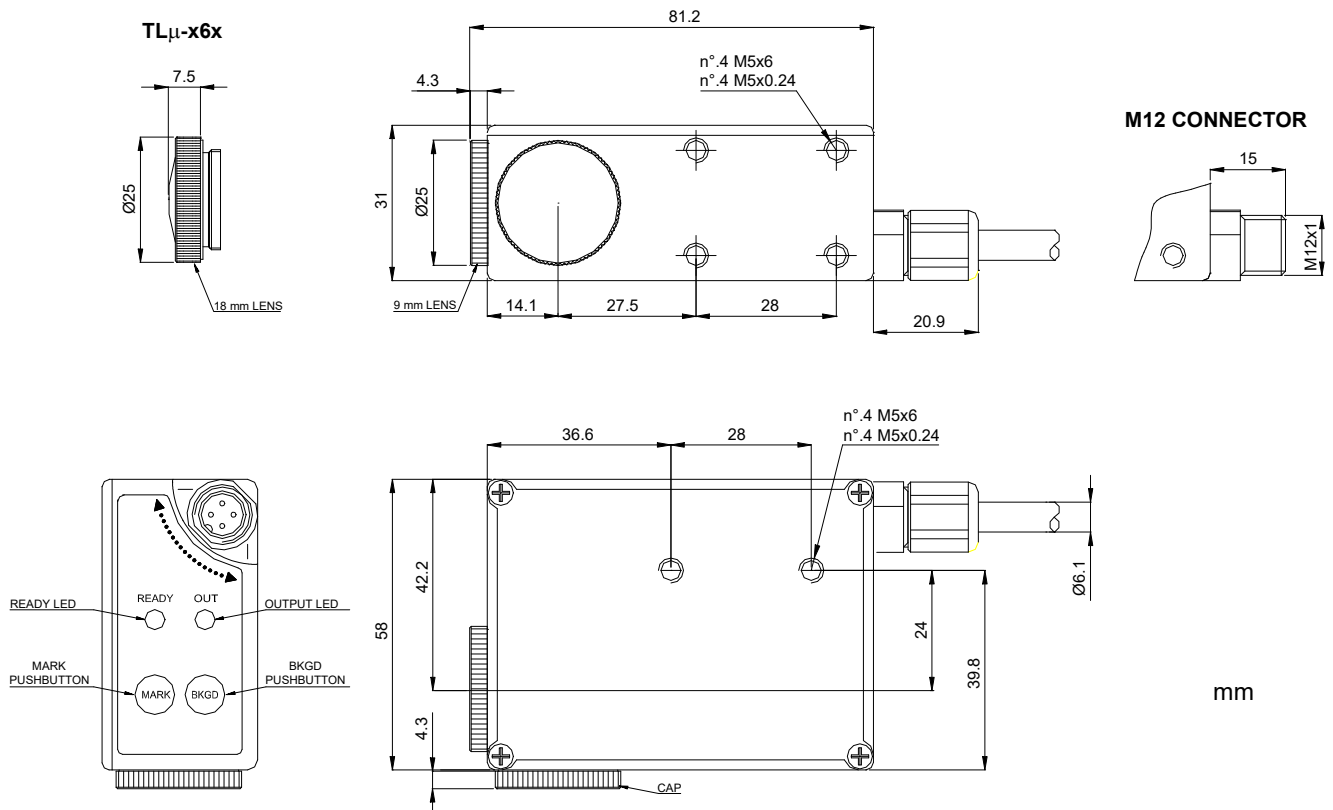


TL μ		
Contrast sensor	6...12 mm (9 mm lens)	
	14...22 mm (18 mm lens)	
	22...34 mm (28 mm lens)	
	40...60 mm (50 mm lens)	
Contrast sensor with fiber optic	0...3 mm (proximity)	
	0...10 mm (through beam)	
Switching frequency	10 kHz	
	20 kHz	
Light emission	red/green LED	
	white LED	
Setting	push buttons	
	remote	
	10...30 V	
Power supply	Vdc	
	Vac	
	Vac/dc	
Output	PNP	•
	NPN	•
	NPN/PNP	
	relay	
	other	0...5 V Analog Output
Connection	cable	•
	connector	•
	pig-tail	
Approximate dimensions (mm)	31x81x58	
Housing material	Zama	
Mechanical protection	IP67	

TECHNICAL DATA

Power supply	10 ... 30 Vdc (limit values; reverse polarity protection)
Ripple	2 Vpp max.
Consumption (output current excluded)	80 mA max.
Light emission	green LED 526 nm/red LED 630 nm (mod. TLμ-0/1xx) white LED 400-700 nm (mod. TLμ-4/5xx)
Setting	teach-in push-buttons/remote by 2 wires, 4 settings storage cable version
Operating mode	Light/Dark automatic setting with teach-in procedure
Indicators	red OUTPUT LED green READY LED
Output	PNP or NPN; analog output
Output current	200 mA max.
Saturation voltage	1 V max. NPN vers., 2 V max. PNP vers.
Response time	50 μs max. (mod. TLμ-4xx) 25 μs max. (mod. TLμ-5xx)
Switching frequency	10 kHz max. (mod. TLμ-4xx) 20 kHz max. (mod. TLμ-5xx)
Connection	3 m shielded cable Ø 6.1 mm, M12 4-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 1
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Minimum spot dimension	1,5 x 5 mm (TLμ-x1x), 2 x 7 mm (TLμ-x6x), Ø 3 mm (TLμ-4xx/5xx)
Depth of field	± 3 mm (TLμ-x1x/4xx/5xx) / ± 4 mm (TLμ-x6x)
Housing material	ZAMA
Lens material	glass
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 70 °C
Weight	450 g max. cable vers., 310 g max. connector vers.

DIMENSIONS

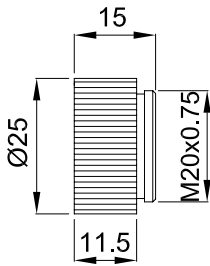


MODEL SELECTION AND ORDER INFORMATION

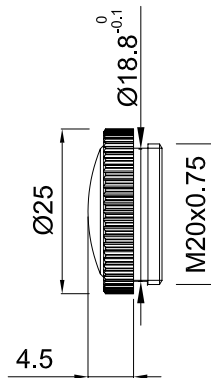
OPTIC FUNCTION	EMISSION	OPTICS	CONNECTION	OUTPUT	MODEL	ORDER No.
Contrast sensor	Red/Green (Vertical spot)	9 mm	3m Cable	NPN	TL μ -011	964401000
				PNP	TL μ -111	964401080
			M12 Connector	NPN	TL μ -015	964401020
				PNP	TL μ -115	964401100
			3m Cable	NPN	TL μ -011L	964401010
				PNP	TL μ -111L	964401090
	M12 Connector	NPN	TL μ -015L	964401030		
		PNP	TL μ -115L	964401110		
	Red/Green (Horizontal spot)	18 mm	M12 Connector	NPN	TL μ -065	964401060
				PNP	TL μ -165	964401140
	White (Circular spot)	9 mm	M12 Connector	NPN	TL μ -415C	954151330
				PNP	TL μ -515C	954151360
3m Cable			NPN	TL μ -411C	954151410	
			PNP	TL μ -511C	954151420	
M12 Connector			PNP	TL μ -545	954151380	
			NPN	TL μ -445	954151350	
Fiber optic contrast sensor	White	Fiber optics	M12 Connector			

ACCESSORIES

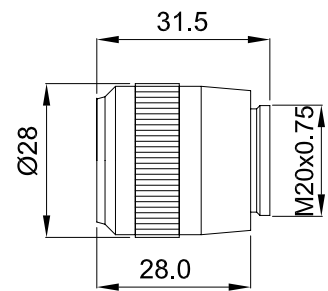
HI-RES LENS



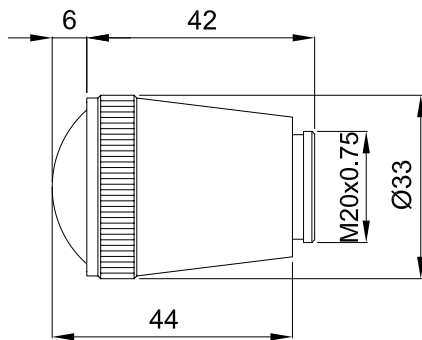
18 mm LENS



22 mm LENS



28 mm LENS



40 mm LENS

